



Form 1449 (Modified) <b>Information Disclosure Statement By Applicant</b> (Use Several Sheets if Necessary)		Atty Docket No. <b>SRI1P030/US-4149-4</b>	Application No.: <b>10/090,430</b>
		Applicant: <b>Heim, et al.</b>	Group
		Filing Date <b>February 2, 2002</b>	Unknown

### Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MB	E1	Pelrine, R., R. Kornbluh, J. Joseph, and S. Chiba, "Electrostriction of Polymer Films for Microactuators," <i>Proc. IEEE Tenth Annual International Workshop on Micro Electro Mechanical Systems</i> , Nagoya, Japan, January 26-30, 1997, pp. 238-243.
	E2	Pelrine, R., R. Kornbluh, and J. Eckerle. "Energy Efficient Electroactive Polymers and Electroactive Polymer Devices", U.S. Patent Application No. 09/779,373, filed February 7, 2001.
	E3	Pelrine, R., and J. Joseph, <i>FY 1992 Final Report on Artificial Muscle for Small Robots</i> , ITAD-3393-FR-93-063, SRI International, Menlo Park, California, March 1993
	E4	Pelrine, R., R. Kornbluh, and J. Joseph, <i>FY 1999 Final Report on Artificial Muscle for Small Robots</i> , ITAD-10162-FR-00-27, SRI International, Menlo Park, California, 2000
	E5	Pelrine, R., R. Kornbluh, Q. Pei, and J. Joseph, "High Speed Electrically Actuated Elastomers with Over 100% Strain," <i>Science</i> , Vol. 287, No. 5454, pages 1-21, 2000
	E6	Pelrine, R., Roy Kornbluh, Jose Joseph, Qibing Pei, Seiki Chiba "Recent Progress in Artificial Muscle Micro Actuators," , SRI International, Tokyo, 1999 MITI/NEEDOIMNIC, 1999
	E7	Smela, E., O. Inganäs, Q. Pei, and I. Lundström, "Electrochemical Muscles: Micromachining Fingers and Corkscrews, "Advanced Materials, Vol.5, No. 9, pp.630-632, September 1993
	E8	Wax, S. G. and R. R. Sands, "Electroactive Polymer Actuators and Devices," Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices, March 1-2, 1999, Newport Beach, California, USA., pp. 2-10.
	E9	Winters, J., "Muscle as an Actuator for Intelligent Robots", Robotics Research:Trans. Robotics International of SME, Scottsdale, AZ (August 21, 1986)
Examiner		Date Considered 5-22-04

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		Filing Date <b>February 2, 2002</b>	<b>Unknown</b>

### Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>MB</i>	D1	Kornbluh, R. D and R. E. Pelrine., "Dexterous Multiarticulated Manipulator with Electrostrictive Polymer Artificial Muscle," ITAD-7247-QR-96-175, SRI Project Number 7247, Prepared for: Office of Naval Research, November 1996
	D2	Lang, J. M. Schlect, and R. Howe, "Electric Micromotors: Electromechanical Characteristics," Proc. IEEE Micro Robots and Teleoperators Workshop, Hyannis, Massachusetts (November 9-11, 1987).
	D3	Lawless, W. and R. Arenz, "Miniature Solid-state Gas Compressor," <i>Rev. Sci Instrum.</i> , 58(8), pp.1487-1493, August 1987
	D4	Nguyen, T., J. A. Willett and Kornbluh, R., "Robotic systems," in ONR Ocean, Atmosphere, and Space Fiscal Year 1998 Annual Reports (Dec. 1998)
	D5	Olsson, A., G. Stemme, and E. Stemme, "The First Valve-less Diffuser Gas Pump," Tenth Annual International Workshop on Micro Electromechanical Systems, Nagoya, Japan, <i>IEEE Proceedings</i> (January 26-30, 1997), pp.108-113.
	D6	R. Pelrine and Kornbluh, R., and. 1995. "Dexterous Multiarticulated Manipulator with Electrostrictive Polymer Artificial Muscle Actuator," EMU 95-023, SRI International, Menlo Park, California, April 28, 1995.
	D7	Pelrine, R. and Kornbluh, "Electroactive Polymer Devices", U.S. Patent Application No. 09/619,846, filed July 20, 2000, 67 pages
	D8	Pelrine <i>et al.</i> , "Electroactive Polymer Generators", U.S. Patent Application No. 09/619,848, filed July 20, 2000, 69 pages
	D9	Pelrine, R., R. Kornbluh, and J. Joseph, "Electrostriction of Polymer Dielectrics with Compliant Electrodes as a Means of Actuation," <i>Sensors and Actuators A: Physical</i> , Vol. 64, 1998, pp.77-85.
<i>J</i>	D10	Pelrine, R., R. Kornbluh and J. Eckerle, "Monolithic Electroactive Polymers", U.S. Patent Application No. 09/779,203, filed February 7, 2001, 47 pages

Examiner	Date Considered
<i>MARK U BUDD PRIMARY EXAMINER</i>	<i>5-20-04</i>

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Form 1049 (TM) (if modified)		Atty Docket No. SRI1P030/US-4149-4	Application No.: 10/090,430
<b>Information Disclosure Statement By Applicant</b>		Applicant: Heim, et al.	Group Unknown
(Use Several Sheets if Necessary)		Filing Date February 2, 2002	

### Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MB	C1	De Rossi, D., and P. Chiarelli. 1994. "Biomimetic Macromolecular Actuators," <i>Macro-Ion Characterization, American Chemical Society Symposium Series</i> , Vol. 548, Ch. 40, pp. 517-530.
	C2	Dowling, K., <i>Beyond Faraday-Non Traditional Actuation</i> , available on the World Wide Web at <a href="http://www.frc.ri.cmu.edu/~nivek/OTH/beyond-faraday/beyondfaraday.html">http://www.frc.ri.cmu.edu/~nivek/OTH/beyond-faraday/beyondfaraday.html</a> , 9 pages, 1994
	C3	Flynn, Anita M., L.S. Tavrow, S.F. Bart, R.A. Brooks, D.J. Ehrlich, K.R. Udayakumar, and L.E. Cross. 1992. "Piezoelectric Micromotors for Microrobots," <i>IEEE Journal of Microelectromechanical Systems</i> , Vol.1, No.1, pp. 44-51 (March 1992); also published as <i>MIT AI Laboratory Memo 1269</i> , Massachusetts Institute of Technology (February 1991).
	C4	Hirose, S., <i>Biologically Inspired Robots: Snake-like Locomotors and Manipulators</i> , "Development of the ACM as a Manipulator", Oxford University Press, New York, 1993, pp.170-172.
	C5	Jacobsen, S., Price, R., Wood, J., Rytting, T., and Rafaelof, M., "A Design Overview of an Eccentric-Motion Electrostatic Microactuator (the Wobble Motor)", <i>Sensors and Actuators</i> , 20 (1989) pages 1-16
	C6	Kornbluh, R., G. Andeen, and J. Eckerle, "Artificial Muscle: The Next Generation of Robotic Actuators," presented at the Fourth World Conference on Robotics Research, SME Paper M591-331, Pittsburgh, PA, September 17-19, 1991.
	C7	Kornbluh, R., Pelrine, R., Eckerle, J., Joseph, J., "Electrostrictive Polymer Artificial Muscle Actuators", IEEE International Conference on Robotics and Automation, Leuven, Belgium, 1998
↓	C8	Ford, V. and J. Kievet, "Technical Support Package on Traveling-Wave Rotary Actuators" NASA Tech Brief Vol. 21, No. 10, Item #145, from JPL New Technology Report NPO-19261, October 1997
Examiner		Date Considered
MB		5-30-04

Examiner **PRIMARY EXAMINER** **Initials** **Examination considered. Draw line through citation if not in conformance and not considered. ART UNIT <sup>319</sup> <sub>319</sub>** **Initials** **Include copy of this form with next communication to applicant.**



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#### U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
MB	A1	5,977,685	11/02/99	Kurita, et al.			06/03/96
	A2	6,060,811	05/09/00	Fox, et al.			07/25/97
	A3	6,084,321	07/04/00	Hunter, et al.			08/07/98
	A4	6,184,608	02/06/01	Cabuz, et al.			12/29/98
	A5	6,184,609	02/06/01	Johansson, et al.			03/26/97
	A6	6,249,076	06/19/01	Madden, et al.			04/14/99
	A7	4,885,783	12/05/89	Whitehead, et al.			04/10/87
	A8	4,236,416	12/02/80	Barcita			9/28/78
	A9	4,240,535	12/23/80	Pierce et al.			12/23/80
✓	A10	4,227,347	10/14/80	Tam			9/14/78

#### Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MB	B1	Bar-Cohen, Yoseph, JPL, <i>Worldwide Electroactive Polymers, EAP (Artificial Muscles) Newsletter</i> , Vol. 3, No.1, June 2001
MB	B2	Baughman, R.H., L.W. Shacklette, and R.L. Elsenbaumer, E. Plichta, and C. Becht, "Mico electromechanical actuators based on conducting polymers", in <i>Molecular Electronics, Materials and Methods</i> , P.I. Lazarev (ed.), Kluwer Academic Publishers, pp. 267-289 (1991)
MB	B3	Brock, D. L., "Review of Artificial Muscle based on Contractile Polymers," <i>MIT Artificial Intelligence Laboratory, A.I. Memo No. 1330</i> , Nov. 1991.
MB	B4	Caldwell, D., G. Medrano-Cerda, and M. Goodwin, "Characteristics and Adaptive Control of Pneumatic Muscle Actuators for a Robotic Elbow," <i>Proc. IEEE Int. Conference on Robotics and Automation, San Diego, California</i> (8-13 May 1994).
MARK L BUDD		
Examiner: <b>PRIMARY EXAMINER</b> ART UNIT 219		Date Considered 5-20-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



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Form 1449 (Modified)

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Statement By Applicant

(Use Several Sheets if Necessary)

Atty Docket No.  
SRI1P030/US-4149-4

Application No.:  
10/090,430

Applicant:

Pelrine *et al.*

Filing Date

February 28, 2002

Group  
2834

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A						
	B						
	C						
	D						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
	J							
	K							
	L							

Other Documents

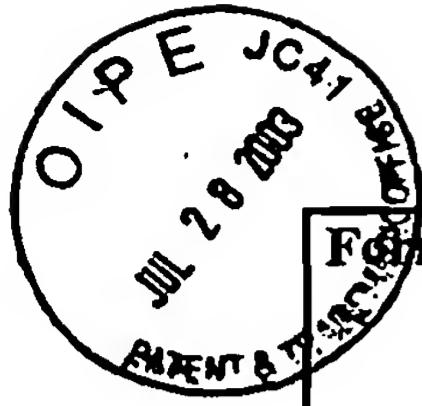
Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>Mb</i>	O	Roy D. Kornbluh, "Robotic Systems, Ocean Engineering and Marine Systems, 2000 Program, January 2001, Office of Naval Research Public Release, ONR-32100-1
<i>Mb</i>	P	Roy D. Kornbluh, "Robotic Systems, Ocean Engineering and Marine Systems, 1999 Program, February 2000, Office of Naval Research Public Release, ONR 32100-2
<i>Mb</i>	Q	Roy D. Kornbluh, "Robotic Systems, Ocean Engineering and Marine Systems, 1998 Program, February 1999 Office of Naval Research Public Release, ONR 32199-4
<i>Mb</i>	R	Roy D. Kornbluh, Robotic Systems, Ocean Engineering and Marine Systems 1997 Program, December 1997, Office of Naval Research Public Release, ONR 32198-2

*MARJORIE BUDDE*  
PRIMARY EXAMINER

Date Considered

5-20-04

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<b>(Use Several Sheets if Necessary)</b>	<b>Filing Date</b> <b>February 28, 2002</b>	<b>Group</b> <b>2834</b>

## U.S. Patent Documents

## **Foreign Patent or Published Foreign Patent Application**

## Other Documents

Other Documents		
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